Mathematics Planning

National Curriculum

2022

Year 3

Key Principles:

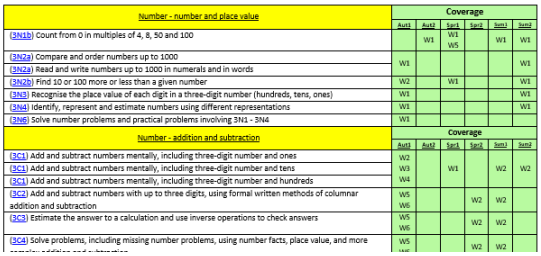
The curriculum builds on prior learning with progression throughout the school. Consideration is given to the order in which knowledge is taught so that children can relate their learning to previous learning. There are key concepts that children must know by the end of year 6 – these are the 'nuggets' of learning in this subject (sticky knowledge, components). Recall opportunities relating to the key concepts are built into the planning regularly so that children retain these 'nuggets' so that they 'know more, remember more and can do more'.

How to Use the Medium Term Planning

This planning document is intended to provide planning support to meet all statutory requirements of the National Curriculum and to aid teachers in planning a progressive learning journey for children within Year 3.

Overview Documents

This document starts with the mathematics skills and the coverage of each strand across the entire year of planning. Teachers and TAs can use this to plan mixed starters in order to pre-teach, consolidate learning or as revision, as well as guidance for day-to-day planning, assessment (linked to ScholarPack) and establishing how long until a topic will next be revisited or if additional lessons to achieve the skill are necessary.



Number - number and place value	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3N1b) Count from 0 in multiples of 4, 8, 50 and 100		W1	W1 W5		W1	W1
(3N2a) Compare and order numbers up to 1000 (3N2a) Read and write numbers up to 1000 in numerals and in words	W1					W1
(3N2b) Find 10 or 100 more or less than a given number	W2		W1			W1
(3N3) Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	W3					W1
(3N4) Identify, represent and estimate numbers using different representations	W4					W1
(3N6) Solve number problems and practical problems involving 3N1 - 3N4	W1					

Number - addition and subtraction	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3C1) Add and subtract numbers mentally, including three-digit number and ones	W2					
(3C1) Add and subtract numbers mentally, including three-digit number and tens	W3		W1		W2	W2
(3C1) Add and subtract numbers mentally, including three-digit number and hundreds	W4					
(3C2) Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	W5 W6			W2	W2	
(3C3) Estimate the answer to a calculation and use inverse operations to check answers	W5 W6			W2	W2	
(3C4) Solve problems, including missing number problems, using number facts, place value, and more	W5			W2	W2	

Year 3 Mathematics Yearly Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Week 1	Place value	Counting Multiplication tables (3x, 4x)	Place value Mental addition and subtraction	2D and 3D shape incl. sorting	Multiplication facts (statistics)	Place value (measures)
Week 2	Place value and mental calculation	Written and mental multiplication	Fractions	Addition and subtraction (statistics)	Addition and subtraction (measures)	Mental calculation
Week 3	2D shape Length incl. perimeter	Written and mental division	Fractions Division	Fractions	Multiplication and division (measures)	Fractions
Week 4	Statistics Mental calculation	Time	Volume and capacity Mass	Position and direction	2D shape incl. sorting	Measures
Week 5	Written addition	3D shape	Multiplication incl. 8x table	Time	Decimals Addition and subtraction (money)	Statistics
Week 6	Written subtraction	Assess and review week	Multiplication (statistics, measures, money)	Assess and review week	3D shape incl. sorting	Assess and review week

'Ctrl' and clicking on each week will take you to the associated Half Termly Planning, outlining the focus area for each week in more detail.

This is followed by an overview document. This identifies six half termly blocks of six weeks with focus areas of mathematics for each week. The units are designed to be cohesive and allow for application of learning and skills across the mathematics curriculum. The 'assess and review' weeks can be used to gain information for teacher assessments or can be used to pick up elements that need further support. It is not designed to be used as an entire week of testing with no teaching. This is a suggested layout and teachers should adapt to meet the needs of their class as required.

Half Termly Planning Documents

The half termly planning documents have been compiled to the following principles:

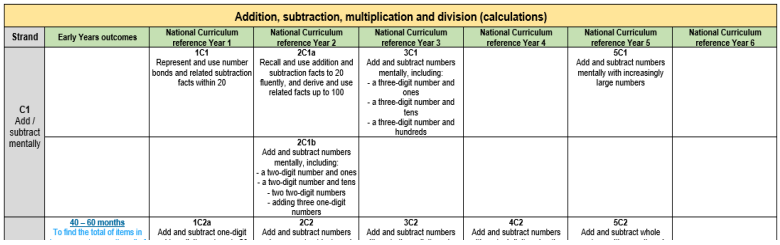
- Each half term is predominantly learning about number.
- Almost all weeks are focused on one area of mathematics, giving children time to focus on a single area for a longer amount of time.
- The 'knowledge' explains the understanding the child will need to achieve the skills. This also explains why specific skills have been put together and how to enhance the teaching and learning during that week, e.g. number work is often given a context of data, measures, money or problem solving.
- The skills are the end of year expectations and it is the decision of teachers whether to visit the whole objective more than once throughout the year or to organise progression within each objective.
- Every skill is covered at least twice within the year.

Adaptive teaching

At Brettenham, we help children develop their conceptual understanding of mathematics by using concrete objects, pictorial representations and abstract thinking, therefore if a child is struggling with a particular abstract concept, we adapt and take a step back to concrete or pictorial, providing them with resources to enable them to understand. As the objectives in the yearly plans are based on age related expectations, children who may struggle to reach the objectives independently will be provided with scaffolds to provide extra support. Scaffolding supports mathematical understanding by providing the necessary support in applying new information. These approaches help children achieve in lessons which they would not be able to on their own.

Progression

The planning documents are followed by a table showing skill progression from Early Years to Year 6. This can be used to establish and build upon previous knowledge, see where children's learning is heading and to also easily identify and fill any gaps in their knowledge.



Addition, subtraction, multiplication and division (calculations)							
Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
C1 Add / subtract mentally		1C1 Represent and use number bonds and related subtraction facts within 20	2C1a Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	3C1 Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds		5C1 Add and subtract numbers mentally with increasingly large numbers	
			2C1b Add and subtract numbers mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers				
	40 – 60 months To find the total of items in	1C2a Add and subtract one-digit	2C2 Add and subtract numbers	3C2 Add and subtract numbers	4C2 Add and subtract numbers	5C2 Add and subtract whole	

National Curriculum Documentation

At the end of this document is the National Curriculum programme of study for Year 3. This contains the skills for Year 3 along with the non-statutory guidance to help with interpretation.

Yearly skills and coverage for Year 3 Mathematics

With links to the Content Domain

Number - number and place value	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3N1b) Count from 0 in multiples of 4, 8, 50 and 100		W1	W1 W5		W1	W1
(3N2a) Compare and order numbers up to 1000	W1					W1
(3N2a) Read and write numbers up to 1000 in numerals and in words						
(3N2b) Find 10 or 100 more or less than a given number	W2		W1			W1
(3N3) Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	W1					W1
(3N4) Identify, represent and estimate numbers using different representations	W1					W1
(3N6) Solve number problems and practical problems involving 3N1 - 3N4	W1					
Number - addition and subtraction (calculations)	**Coverage**					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3C1) Add and subtract numbers mentally, including three-digit number and ones	W2 W3 W4		W1		W2	W2
(3C1) Add and subtract numbers mentally, including three-digit number and tens						
(3C1) Add and subtract numbers mentally, including three-digit number and hundreds						
(3C2) Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	W5 W6			W2	W2	
(3C3) Estimate the answer to a calculation and use inverse operations to check answers	W5 W6			W2	W2	
(3C4) Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	W5 W6			W2	W2	
Number - multiplication and division (calculations)	**Coverage**					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3C6) Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	W1		W5		W1 W3	W2
(3C7) Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods		W2 W3	W3 W5 W6		W3	
(3C8) Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects		W2 W3	W6		W2	
Number - fractions	**Coverage**					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3F1a) Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10					W5	
(3F1b) Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators			W2 W3			W3
(3F1c) Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			W2			W3
(3F2) Recognise and show, using diagrams, equivalent fractions with small denominators				W3		W3
(3F3) Compare and order unit fractions, and fractions with the same denominators				W3		
(3F4) Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]				W3		
(3F10) Solve problems that involve 3F1 - 3F4				W3		
Measurement	**Coverage**					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(3M1a) Compare lengths (m/cm/mm)	W3				W2	W4
(3M1b) Compare mass (kg/g)			W4		W2	W4
(3M1c) Compare volume/capacity (l/ml)			W4		W2	W4
(3M2a) Measure lengths (m/cm/mm)	W3				W2	W4
(3M2b) Measure mass (kg/g)			W4		W2	W4
(3M2c) Measure volume/capacity (l/ml)			W4		W2	W4
(3M4a) Tell and write the time from an analogue clock; 12-hour clocks		W4		W5		
(3M4b) Tell and write the time from an analogue clock; 24-hour clocks		W4		W5		
(3M4c) Tell and write the time from an analogue clock, including using Roman numerals from I to XII		W4		W5		

(3M4d) Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight		W4		W5		
(3M4e) Know the number of seconds in a minute and the number of days in each month, year and leap year		W4		W5		
(3M4f) Compare durations of events [for example to calculate the time taken by particular events or tasks]				W5		
(3M7) Measure the perimeter of simple 2-D shapes	W3				W2	W4
(3M9a) Add and subtract amounts of money to give change, using both £ and p in practical contexts						
(3M9b) Add and subtract lengths (m/ cm/ mm)	W3				W2	W4
(3M9c) Add and subtract mass (kg/ g)			W4		W2	W4
(3M9d) Add and subtract volume/ capacity (l/ ml)			W4		W2	W4
Geometry - properties of shapes	**Coverage**					
	Aut1	**Aut2**	**Spr1**	**Spr2**	**Sum1**	**Sum2**
(3G2) Identify horizontal and vertical lines and pairs of perpendicular and parallel lines		W5		W1	W4	
(3G3a) Draw 2-D shapes	W3			W1	W4	
(3G3b) Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them		W5		W1	W6	
(3G4a) Recognise that angles are a property of shape or a description of a turn				W1	W4	
(3G4b) Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle				W1 W4	W4	
Statistics	**Coverage**					
	Aut1	**Aut2**	**Spr1**	**Spr2**	**Sum1**	**Sum2**
(3S1) Interpret and present data using bar charts, pictograms and tables	W4				W1	W5
(3S2) Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	W4			W2	W1	W5

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Week 2	Place value and mental calculation	Written and mental multiplication	Fractions	Addition and subtraction (statistics)	Addition and subtraction (measures)	Mental calculation
Week 3	2D shape Length incl. perimeter	Written and mental division	Fractions Division	Fractions	Multiplication and division (measures)	Fractions
Week 4	Statistics Mental calculation	Time	Volume and capacity Mass	Position and direction	2D shape incl. sorting	Measures
Week 5	Written addition	3D shape	Multiplication incl. 8x table	Time	Decimals Addition and subtraction (money)	Statistics
Week 6	Written subtraction	Assess and review week	Multiplication (statistics, measures, money)	Assess and review week	3D shape incl. sorting	Assess and review week

Year 3 Autumn 1			
	Links to Content Domain	**Skills**	**Knowledge**
Week 1 *Place value*	3N2a 3N3 3N4 3N2a 3N6	• Read and write numbers up to 1000 in numerals and in words. • Recognise the place value of each digit in a three-digit number (hundreds, tens and ones). • *Partition numbers in different ways.* • Identify, represent and estimate numbers using different representations, *including the number line.* • Compare and order numbers up to 1000. • *Round numbers to at least 1000 to the nearest 10 or 100.* • Solve number problems and practical problems involving these ideas.	Understanding of the number system is necessary pre-requisite knowledge for any number work. Children should understand the Base 10 notion in which there are 10 numerals (0-9) and these can be organised in different ways to form any number. This is based on grouping in tens i.e. ten 1s are the same as one 10; ten 10s are the same as one 100; ten 100s are the same as one 1000 and so on. And vice versa. Partitioning numbers in different ways is an objective from Year 2, but requires consolidating to support later work on calculations. When comparing and ordering numbers, children should use a variety of resources, including the number line.
Week 2 *Place value and mental calculation*	3N2b 3C1	• Find 1, 10 or 100 more or less than a given number. • Add numbers mentally, including: a three-digit number and ones; and tens; and hundreds. • Subtract numbers mentally, including: a three-digit number and ones; and tens; and hundreds. • *Add and subtract mentally combinations of two-digit numbers.* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.*	Children apply their knowledge of place value to mentally calculate using addition and subtraction, recognising which digits will change and which will stay the same and why. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
Week 3 *2-D shape, place value, measures, mental calculation in context of length*	3G3a 3M1a 3M2a 3M9b 3M7 3C1	• Draw 2-D shapes and describe them. • Recognise angles as a property of shape. • Measure, compare, add and subtract: lengths (m/cm/mm). • *Understand that perimeter is a measure of distance around the boundary of a shape.* • Measure the perimeter of simple 2-D shapes. • *Derive and use addition and subtraction facts for 100.* • *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* *- a 2-digit number and ones* *- a 2-digit number and tens* *- two 2-digit numbers* *- adding three 1-digit numbers.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.*	Children measure distances using a variety of tools and units and record these measurements in preparation for the following week. They measure and draw 2-D shapes. This gives children the opportunity to apply their place value and mental calculation knowledge in the context of length. Perimeter is a measure of distance linking length with mental addition and the opportunity to problem solve in context. Children should use mixed units e.g. 4m and 34cm and know simple equivalence between units.
Week 4 *Present, interpret, mentally calculate in context of tables and bar charts*	3S1 3S2 3C1	• Interpret and present data using bar charts and tables. • Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and tables. • *Derive and use addition and subtraction facts for 100.* • *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* *- a 2-digit number and ones* *- a 2-digit number and tens* *- two 2-digit numbers* *- adding three 1-digit numbers.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.*	The tables and bar charts can be created from measurements taken the previous week. Children are applying their knowledge of place value and mental calculation in the context of tables and bar charts.
Week 5 *Written addition*	3C2 3C3 3C4	• Add numbers with up to three digits, using formal written method of columnar addition. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex addition.	Children build on their understanding of place value and skills in mental calculation to develop a written method for addition. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.
Week 6	3C2	• Subtract numbers with up to three digits, using formal written method of columnar subtraction.	Children build on their understanding of place value and skills in mental calculation to develop a written method for subtraction.

Written subtraction	3C3 3C4	• *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.	Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.

Year 3 Autumn 2			
	Links to Content Domain	**Skills**	**Knowledge**
Week 1 *Counting, sequences, multiplication facts*	3N1b 3C6	• Count from 0 in multiples of 4. • Recall and use multiplication and division facts for the 3 and 4 times tables. • *Describe and extend number sequences involving counting on or back in different steps.* • *Use sorting diagrams to compare and sort numbers.*	Children need time to experience counting in equal steps, and multiplication and division facts and relationships so that they understand and can use this knowledge in a variety of situations. Children should be using Venn and Carroll diagrams to sort numbers according to their properties. The learning in this week is in preparation for the next week.
Week 2 *Written and mental multiplication*	3C7 3C8	• Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures.* • Solve problems, including missing number problems involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Children build on their understanding of place value and multiplication facts to develop mental strategies for multiplication and begin developing a written method. Children should learn when to use mental methods and when to use written methods. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2. Integer scaling problems support children in understanding multiplication as making amounts a number of times larger, which is different to understanding as repeated addition. Correspondence problems, such as, 3 different coloured hats and 3 different coloured coats would give how many different possible combinations, allow children to spot patterns and generalise using their knowledge of multiplication facts.
Week 3 *Written and mental division*	3C7 3C8	• Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures.* • Solve problems, including missing number problems, involving division (and interpreting remainders) and correspondence problems in which n objects are connected to m objects.	Children build on their understanding of place value and multiplication facts to develop mental strategies for division and begin developing a written method. Children should learn when to use mental methods and when to use written methods. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2. Correspondence problems, such as, 12 sweets shared equally between 4 children.
Week 4 *Time*	3M4a 3M4b 3M4c 3M4d 3M4d 3M4e	• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute. • Record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • *Solve simple problems involving passage of time.*	Children learn the relationships between the units of time, and other key vocabulary involving time. Children learn to tell the time (including on clocks where the numbers are Roman numerals) and on digital clocks, using 12 and 24 hour clock notation. The learning in this week requires regular revisiting through natural daily activities and routines.
Week 5 *3-D shape*	3G3b 3G3b 3G2	• Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • *Compare and sort common 3-D shapes and everyday objects. (Year 2 objective)*	Children further develop their knowledge of 3-D shapes. When making shapes, children are experiencing what faces, edges and vertices 'feel' like and should be encouraged to use this vocabulary as they work. The vocabulary develops to include parallel and perpendicular, relating their knowledge of right angles to describing the position of lines or edges relative to each other. The development of new vocabulary should be applied when sorting and comparing shapes.
Week 6		Assess and review week	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.

Year 3 Spring 1			
	Links to Content Domain	**Skills**	**Knowledge**
Week 1 *Place value, counting and mental addition and subtraction*	3N2b 3C1	• Find 1, 10 or 100 more or less than a given number. • Count from 0 in multiples of 50 and 100. • *Describe and extend number sequences involving counting on or back in different steps.* • Add and subtract mentally: - a three-digit number and ones - a three-digit number and tens - a three digit number and hundreds. • *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* *- a 2-digit number and ones* *- a 2-digit number and tens* *- two 2-digit numbers. (Year 2 objective)* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*	It is useful to begin a term with learning related to place value, as further learning in the term will be reliant on secure understanding of the number system. The place value work in this week is in the context of sequences and calculation. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
Week 2 *Fractions*	3F1c 3F1b	• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • *Understand that finding a fraction of an amount relates to division.* • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • *Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as 3 ÷ 4).*	The learning of fractions is an extension in understanding of the number system. Learning how to calculate fractions of amounts by sharing in practical contexts, is a valuable experience before making the link to division. Children's understanding of fractions should go beyond the 0-1 interval.
Week 3 *Fractions and written and mental division*	 3F1b 3C7	• *Understand that finding a fraction of an amount relates to division.* • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • *Understand how division statements can be represented using arrays.* • *Understand division as sharing and grouping and use each appropriately.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods.	Children build on their understanding of fractions of shapes, using these shapes when sharing items into equal groups. The link between finding fractions of amounts and division is made. When children are calculating fractions of amounts, this should be in a context e.g. length, money, time to consolidate previous learning. When finding fractions of amounts, children need to understand that this is division by sharing.
Week 4 *Measures and calculation in the context of volume and capacity and mass*	3M1c 3M2c 3M9d 3M1b 3M2b 3M9c	• Measure, compare, add and subtract volumes and capacities. • Measure, compare, add and subtract masses. • *Solve problems involving and measures.*	Children gain valuable practical experience of volume and capacity, and learn to understand the difference between the two. At this stage, volume refers to the amount of liquid within a container, and capacity is the maximum amount of liquid a container can hold. Both therefore are measured in l and ml. Children should develop an understanding of a 'benchmark' for estimating volume/capacity e.g. a can of fizzy drink is 330ml. Practical experiences should also further children's knowledge and understanding of mass, including the units of gram (g) and kilogram (kg), and they should develop an understanding of a 'benchmark' mass of a common familiar object e.g. a bag of sugar having a mass of 1kg. Children should call upon their knowledge of place value and calculations in the context of measurement.
Week 5 *Counting, sequences, multiplication facts, mental and written multiplication*	3N1b 3C6 3C7	• Count from 0 in multiples of 8. • Recall and use multiplication and division facts for the 8 multiplication tables. • *Use sorting diagrams to compare and sort numbers.* • *Describe and extend number sequences involving counting on or back in different steps.* • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit	Children build on their knowledge of the 4 times table to derive the 8 times table, recognising the relationship between the answers in both. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.

		numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*	
Week 6 *Mental and written multiplication, in the context of pictograms, measurements and money.*	3C7 3C8	• Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures.* • Solve problems, including missing number problems involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Children are introduced to pictograms in which each symbol is worth more than 1. They use their knowledge of multiplication and counting in equal steps to calculate in the context of pictograms. Other opportunities to consolidate measurement and money should be taken when asking children to calculate. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.

Year 3 Spring 2			
	Links to Content Domain	**Skills**	**Knowledge**
Week 1 *2-D and 3-D shape including angles.*	3G3a 3G3b 3G3b 3G4a 3G4b 3G2	• Draw 2-D shapes and describe them. • Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them. • Recognise that angles area property of a shape or a description of a turn. • Identify whether angles are greater than or less than a right angle. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • *Compare and sort common 2-D and 3-D shapes and everyday objects. (Year 2 objective)*	Children revisit their learning of the properties of 2-D and 3-D shape, drawing and making shapes in different ways e.g. drawing 2-D shapes on dotted paper; using set squares; creating 2-D shapes by combining other shapes; creating 3-D shapes using straws and plasticine; Clixi, Polydron or other construction materials. The emphasis of the learning should be on children's accurate use of language when making, identifying, describing, comparing and sorting shapes.
Week 2 *Written addition and subtraction in the context of bar charts, pictograms and tables*	3C2 3C2 3C3 3C4 3S2	• Add numbers with up to three digits, using formal written method of columnar addition. • Subtract numbers with up to three digits, using formal written method of columnar subtraction. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Children further develop their understanding of addition and subtraction. Rehearsing the processes involved in written methods and exploring their relationship when solving missing number problems. The calculation problems are within the context of handling data. Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.
Week 3 *Fractions*	3F2 3F4 3F3 3F10	• Recognise and show, using diagrams, equivalent fractions with small denominators. • Add and subtract fractions with the same denominator within one whole (*using diagram)* (for example, $\frac{5}{7}+\frac{1}{7}=\frac{6}{7}$). • *Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as 3 ÷ 4).* • Compare and order unit fractions and fractions with the same denominators (*including on a number line*). • Solve problems involving fractions.	Children build on their knowledge of fractions of shapes when moving into dealing with fractions as abstract numbers. When calculating and ordering fractions, children relate the fraction number to fraction shapes. Children's understanding of fractions should go beyond the 0-1 interval.
Week 4 *Position and direction*	3G4b	• *Use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line. (Year 2 objective)* • *Describe positions on a square grid labelled with letters and numbers.*	There is no additional learning for Geometry: position and direction in Year 3 so it is important that the learning from Year 2 is consolidated and the precursor learning for coordinates is in place.
Week 5 *Time*	3M4a 3M4b 3M4c 3M4d 3M4d 3M4e 3M4f	• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate and read time with increasing accuracy to the nearest minute. • Record and compare time in terms of seconds, minutes and hours; use vocabulary such as, o'clock, a.m./p.m., morning, afternoon, noon and midnight. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events, for example to calculate the time taken by particular events or tasks. • *Solve simple problems involving passage of time.*	Children learn the relationships between the units of time, and other key vocabulary involving time. Children learn to tell the time (including on clocks where the numbers are Roman numerals) and on digital clocks, using 12 and 24 hour clock notation. The learning in this week requires regular revisiting through natural daily activities and routines.
Week 6		Assess and review week.	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.

Year 3 Summer 1			
	Links to Content Domain	**Skills**	**Knowledge**
Week 1 *Counting, sequencing in the context of statistics*	3N1b 3C6 3S1	• Count from 0 in multiples of 4, 8, 50 and 100. • Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. • *Describe and extend number sequences involving counting on or back in different steps.* • Interpret (and present data) using bar charts, pictograms and tables.	Children use their counting, sequencing and multiplication facts knowledge in the context of handling data. The emphasis for the handling data should be on interpreting information, though there may be some mention of presentation, particularly for creating scales on bar charts by counting in equal steps.
Week 2 *Addition and subtraction in the practical context of measures.*	3C1 3C2 3C3 3C4 3M7 3M1a 3M2a 3M9b 3M1b 3M2b 3M9c 3M1c 3M2c 3M9d	• Add and subtract mentally: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds. • Add numbers with up to three digits, using formal written method of columnar addition. • Subtract numbers with up to three digits, using formal written method of columnar subtraction. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • Estimate the answer to a calculation and use inverse operations to check the answers. • *Solve problems involving money and measures and simple problems involving passage of time.* • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • Measure the perimeter of simple shapes. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).	Children rehearse their skills of mental and written addition and subtraction in the context of measures, including perimeter. Children should engage in practical measuring activities and solve calculations based on the measurements they have made. This could involve estimating length, mass and capacity then accurately measuring and calculating the difference between the estimate and the actual measurement. Other contexts should also be used. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
Week 3 *Multiplication and division in the practical context of measures.*	3C6 3C7 3C7 3C8	• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures and simple problems involving passage of time.* • Solve problems, including missing number problems involving multiplication and division, including positive integer scaling problems.	Children rehearse their skills of mental and written multiplication and division in the context of measures, including perimeter of regular shapes. Children should engage in practical measuring activities and solve calculations based on the measurements they have made.
Week 4 *2-D shape and angles*	3G3a 3G2 3G4a 3G4b 3G4b	• Draw 2-D shapes and describe them. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • Recognise that angles are a property of a shape or a description of a turn. • Identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn. • Identify whether angles are greater than or less than a right angle. • *Compare and sort common 2-D and 3-D shapes and everyday objects. (Year 2 objective)*	Children make links between their developing knowledge of shape and the language related to the position of lines/sides in relation to each other and also the angles made where lines/sides meet. This is an understanding of angles as a measure of turn, but the 'turn' is static i.e. the sides of the shape are not turning. The angle understanding also incorporates a dynamic understanding in which movement is made.
Week 5 *Addition and subtraction involving money*	3F1a 3F1a	• Count up and down in tenths. • Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. • *Identify the value of each digit to one decimal place.*	Children may require further learning on decimal notation prior to or during this unit. It is often difficult for children to make the link between their understanding of hundreds, tens and units

		• *Read and write numbers with one decimal place.* • *Compare and order numbers with one decimal place.* • *Continue to recognise and use symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds and pence.* • *Recognise that ten 10p coins are equivalent to £1 and that each coin is* $\frac{1}{10}$ *of £1.* • Add and subtract amounts of money to give change, using both £ and p in practical contexts. • *Solve problems involving money.* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*	and £ and p notation (the 10p coins do not go in the 'tens' column when using £ and p notation).
Week 6 *3-D shape*	3G3b 3G3b	• Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them. • *Compare and sort common 2-D and 3-D shapes and everyday objects. (Year 2 objective)*	Children embed their learning of the properties 3-D shape, making shapes in different ways e.g. creating 3-D shapes using straws and plasticine; Clixi, Polydron or other construction materials. The emphasis of the learning should be on children's accurate use of language when making, identifying and describing shapes.

Year 3 Summer 2			
	Links to Content Domain	Skills	Knowledge
Week 1 *Place value in the context of measures*	3N1b 3N2b 3N3 3N2a 3N4 3N2a	• Count from 0 in multiples of 4, 8, 50 and 100. • Find 1, 10 or 100 more or less than a given number. • Recognise the place value of each digit in a three-digit number (hundreds, tens and ones). • *Identify the value of each digit to one decimal place.* • Compare and order numbers up to 1000. • Identify, represent and estimate numbers using different representations, *including the number line.* • Read and write numbers up to 1000 in numerals and in words. • *Solve problems involving measures and simple problems involving passage of time.*	Much of the learning of place value can be put into the context of measures, through looking at number lines on different measuring tools and comparing and ordering measurements. Scales on measuring instruments can be used as the context for counting and sequences with equal step size. Measurement also allows children to experience numbers in different ways.
Week 2 *Mental calculation in a variety of contexts, including money, measures and statistics*	3C1 3C6	• Add and subtract mentally a three-digit number and ones, tens and hundreds. • *Derive and use addition and subtraction facts for 100.* • *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* *- a 2-digit number and ones* *- a 2-digit number and tens* *- two 2-digit numbers* *- adding three 1-digit numbers. (Year 2 objective)* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures and simple problems involving passage of time.* • Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Children should secure their knowledge and understanding of mental calculation skills in a variety of contexts. The learning should include decision making around why it is most appropriate to solve these calculations using a mental method. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
Week 3 *Fractions in practical contexts*	3F1c 3F2 3F1b	• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Recognise and show, using diagrams, equivalent fractions with small denominators. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • *Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as 3 ÷ 4).*	Children's understanding of fractions is consolidated in the application in a variety of different contexts. Children should solve a variety of problems involving fractions, and seeing and using them in different ways. Children's understanding of fractions should go beyond the 0-1 interval.
Week 4 *Measures*	3M7 3M1a 3M2a 3M9b 3M1b 3M2b 3M9c 3M1c 3M2c 3M9d	• Measure the perimeter of simple 2-D shapes. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • *Solve problems involving measures.*	Children estimate and measure lengths (link to jumping and throwing in PE), mass and volume/capacity in real contexts. The learning also includes solving problems by calculating perimeter using mental and written strategies.
Week 5 *Statistics*	3S1 3S2	• Interpret and present data using bar charts, pictograms and tables. • Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Children use the measurements made in the previous week to present and interpret data in different forms. They should discuss the value of presenting information in tables, pictograms and bar charts and evaluate the effectiveness of each type of presentation.
Week 6		Assess and review week	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.

Whole School Domain Progression

Number and place value; approximation and estimation / rounding (KS2)							
Strand	**Early Years outcomes**	**National Curriculum reference Year 1**	**National Curriculum reference Year 2**	**National Curriculum reference Year 3**	**National Curriculum reference Year 4**	**National Curriculum reference Year 5**	**National Curriculum reference Year 6**
N1 Counting (in multiples)	Nursery Outcomes Recite numbers past 5. Say one number name for each item from 1-5. Know that the last number reached when counting a set of objects tells you have many there is in total. Reception Outcomes (ELG) Verbally count beyond 20, recognising the pattern of the counting system.	**1N1a** Count to and across 100, forward and backwards, beginning with 0 or 1, or from any given number	**2N1** Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward		**4N1** Count in multiples of 6, 7, 9, 25 and 1000	**5N1** Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
		1N1b Count in multiples of twos, fives and tens		**3N1b** Count from 0 in multiples of 4, 8, 50 and 100			
N2 Read, write, order and compare numbers	Nursery Outcomes Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals. Reception Outcome Link the number symbol (numeral) with its cardinal number value. (1-10)	**1N2a** Count, read and write numbers to 100 in numerals	**2N2a** Read and write numbers to at least 100 in numerals and in words	**3N2a** Compare and order numbers up to 1000 Read and write numbers to 1000 in numerals and in words	**4N2a** Order and compare numbers beyond 1000	**5N2** Read, write, order and compare numbers to at least 1 000 000	**6N2** Read, write, order and compare numbers up to 10 000 000
	Nursery Outcomes Compare quantities saying 'lots' 'more' and 'same'. Reception Outcomes (ELG) Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	**1N2b** Given a number, identify one more and one less	**2N2b** Compare and order numbers from 0 up to 100; use <, > and = signs	3N2b Find 10 or 100 more or less than a given number	4N2b Find 1000 more or less than a given number		
		1N2c Read and write numbers from 1 to 20 in numerals and words					
N3 Place value; Roman numerals			**2N3** Recognise the place value of each digit in a two-digit number (tens, ones)	**3N3** Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	**4N3a** Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones)	**5N3a** Determine the value of each digit in numbers up to 1 000 000	**6N3** Determine the value of each digit in numbers up to 10 000 000
					4N3b Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the	**5N3b** Read Roman numerals to1000 (M) and recognise years written in Roman numerals	

					concept of zero and place value		
N4 Identify, represent and estimate; rounding	Nursery Outcomes Show 'finger numbers' up to 5. Subitise up to 3 objects. Link numerals and amounts: for example, showing the right number of objects up to 5. Reception Outcome (ELG) Link numeral with cardinal number value (1-10) Subitise (recognise quantities without counting) up to 5	**1N4** Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	**2N4** Identify, represent and estimate numbers using different representations, including the number line	**3N4** Identify, represent and estimate numbers using different representations	**4N4a** Identify, represent and estimate numbers using different representations	**5N4** Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	**6N4** Round any whole number to a required degree of accuracy
					4N4b Round any number to the nearest 10, 100 or 1000		
N5 Negative numbers					**4N5** Count backwards through zero to include negative numbers	**5N5** Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	**6N5** Use negative numbers in context, and calculate intervals across zero
N6 Number problems			**2N6** Use place value and number facts to solve problems	3N6 Solve number problems and practical problems involving **3N1–3N5**	**4N6** Solve number and practical problems that involve **4N1–4N5** and with increasingly large positive numbers	**5N6** Solve number problems and practical problems that involve **5N1–5N5**	**6N6** Solve number problems and practical problems that involve **6N2–6N5**
Addition, subtraction, multiplication and division (calculations)							
Strand	**Early Years outcomes**	**National Curriculum reference Year 1**	**National Curriculum reference Year 2**	**National Curriculum reference Year 3**	**National Curriculum reference Year 4**	**National Curriculum reference Year 5**	**National Curriculum reference Year 6**
C1 Add / subtract mentally	Reception Outcome (ELG) Automatically recall number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	**1C1** Represent and use number bonds and related subtraction facts within 20	**2C1a** Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	**3C1** Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds		**5C1** Add and subtract numbers mentally with increasingly large numbers	
			2C1b Add and subtract numbers mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers				
		1C2a	**2C2**	**3C2**	**4C2**	**5C2**	

C2 Add / subtract using written methods		Add and subtract one-digit and two-digit numbers to 20, including zero	Add and subtract numbers using concrete objects and pictorial representations, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers -adding three one-digit numbers	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
		1C2b Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs					
C3 Estimate, use inverses and check			**2C3** To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems	**3C3** Estimate the answer to a calculation and use inverse operations to check answers	**4C3** Estimate and use inverse operations to check answers to a calculation	**5C3** Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	**6C3** Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
C4 Add/subtract to solve problems		**1C4** Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9	**2C4** Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods	**3C4** Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	**4C4** Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	**5C4** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	**6C4** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
C5 Properties of number (multiples, factors, primes, squares and cubes)						**5C5a** Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers	**6C5** Identify common factors, common multiples and prime numbers
						5C5b Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	
						5C5c Establish whether a number up to 100 is prime and recall prime numbers up to 19	
						5C5d Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	
C6			**2C6** Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables,	**3C6** Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	**4C6a** Recall multiplication and division facts for multiplication tables up to 12 × 12	**5C6a** Multiply and divide numbers mentally drawing upon known facts	**6C6** Perform mental calculations, including with mixed operations and large numbers

Multiply / divide mentally			including recognising odd and even numbers				
					4C6b Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	**5C6b** Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
					4C6c Recognise and use factor pairs and commutativity in mental calculations		
C7 Multiply / divide using written methods			**2C7** Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	**3C7** Write and calculate mathematical statements for multiplication and division using the multiplication tables that children know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	**4C7** Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	**5C7a** Multiply numbers up to 4 digits by a one-or two-digit number using a formal written method, including long multiplication for two-digit numbers	**6C7a** Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
						5C7b Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	**6C7b** Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
							6C7c Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
C8 Solve problems (commutative, associative, distributive and all four operations)	**Nursery Outcomes** Solve some real-world mathematical problems with numbers up to 5, **Reception Outcomes (ELG)** Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	**1C8** Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	**2C8** Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	**3C8** Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects	**4C8** Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	**5C8a** Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	**6C8** Solve problems involving addition, subtraction, multiplication and division
						5C8b	

						Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
						5C8c Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates	
C9 Order of operations			**2C9a** Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				**6C9** Use their knowledge of the order of operations to carry out calculations involving the four operations
			2C9b Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot				

Fractions, decimals and percentages

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
F1 Recognise, find, write, name and count fractions	**Reception Outcomes** Halving and sharing objects practically.	**1F1a** Recognise, find and name a half as one of two equal parts of an object, shape or quantity	**2F1a** Recognise, find, name and write fractions 1/3, ¼ , 2/4 and ¾ of a length, shape, set of objects or quantity	**3F1a** Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	**4F1** Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten		
		1F1b Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	**2F1b** Write simple fractions [e.g.: ½ of 6 = 3]	**3F1b** Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators			
				3F1c Recognise and use fractions as numbers:			

				unit fractions and non-unit fractions with small denominators			
F2 Equivalent fractions			**2F2** Recognise the equivalence of 2/4 and ½	**3F2** Recognise and show, using diagrams, equivalent fractions with small denominators	**4F2** Recognise and show, using diagrams, families of common equivalent fractions	**5F2a** Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number [e.g.: 2/5 + 4/5 = 6/5= 1 1/5]	**6F2** Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
						5F2b Identify name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	
F3 Comparing and ordering fractions				**3F3** Compare and order unit fractions and fractions with the same denominators		**5F3** Compare and order fractions whose denominators are all multiples of the same number	**6F3** Compare and order fractions, including fractions >1
F4 Add / subtract fractions				3F4 Add and subtract fractions with the same denominator within one whole [e.g.: 5/7 + 1/7= 6/7]	**4F4** Add and subtract fractions with the same denominator	**5F4** Add and subtract fractions with the same denominator and denominators that are multiples of the same number	**6F4** Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
F5 Multiply / divide fractions						**5F5** Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	**6F5a** Multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g.: ¼ × ½ = 1/8]
							6F5b Divide proper fractions by whole numbers [e.g.: 1/3 ÷ 2 = 1/6]
F6 Fractions / decimals equivalence					**4F6a** Recognise and write decimal equivalents to ¼, ½, 3/4	**5F6a** Read and write decimal numbers as fractions [e.g.: 0.71 = 71/100]	**6F6** Associate a fraction with division to calculate decimal fraction equivalents (e.g.: 0.375) for a simple fraction [e.g.: 3/8]
					4F6b Recognise and write decimal equivalents of any number of tenths or hundredths	**5F6b** Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
F7 Rounding decimals [KS2]					**4F7** Round decimals with one decimal place to the nearest whole number	**5F7** Round decimals with two decimal places to the nearest whole number and to one decimal place	

F8 Compare and order decimals					**4F8** Compare numbers with the same number of decimal places up to two decimal places	**5F8** Read, write, order and compare numbers with up to three decimal places	
F9 Multiply / divide decimals					**4F9** Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		**6F9a** Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
							6F9b Multiply one-digit numbers with up to two decimal places by whole numbers
							6F9c Use written division methods in cases where the answer has up to two decimal places
F10 Solve problems with fractions and decimals				**3F10** Solve problems that involve 3F1–3F4	**4F10a** Solve problems involving increasingly harder fractions to calculate quantities and fractions to divide quantities, including non-unit fractions where the answer is a whole number	**5F10** Solve problems involving numbers up to three decimal places	**6F10** Solve problems which require answers to be rounded to specified degrees of accuracy
					4F10b Solve simple measure and money problems involving fractions and decimals to two decimal places		
F11 Fractions / decimal / percentage equivalence						**5F11** Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal	**6F11** Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
F12 Solve problems with percentages						**5F12** Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	
Ratio and proportion							
Strand	**Early Years outcomes**	**National Curriculum reference Year 1**	**National Curriculum reference Year 2**	**National Curriculum reference Year 3**	**National Curriculum reference Year 4**	**National Curriculum reference Year 5**	**National Curriculum reference Year 6**

R1 Relative sizes, similarity							**6R1** Solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts
R2 Use of percentages for comparison							**6R2** Solve problems involving the calculation of percentages [e.g.: of measures such as 15% of 360] and the use of percentages for comparison
R3 Scale factors							**6R3** Solve problem involving similar shapes where the scale factor is known or can be found
R4 Unequal sharing and grouping							**6R4** Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Algebra							
Strand	**Early Years outcomes**	**National Curriculum reference Year 1**	**National Curriculum reference Year 2**	**National Curriculum reference Year 3**	**National Curriculum reference Year 4**	**National Curriculum reference Year 5**	**National Curriculum reference Year 6**
A1 Missing number problems expressed in algebra							**6A1** Express missing number problems algebraically
A2 Simple formulae expressed in words							**6A2** Use simple formulae
A3 Generate and describe linear number sequences							**6A3** Generate and describe linear number sequences
A4 Number sentences involving two unknowns							**6A4** Find pairs of numbers that satisfy an equation with two unknowns
A5							**6A5**

Enumerate all possibilities of combinations of							Enumerate possibilities of combinations of two variables
Measurement							
Strand	**Early Years outcomes**	**National Curriculum reference Year 1**	**National Curriculum reference Year 2**	**National Curriculum reference Year 3**	**National Curriculum reference Year 4**	**National Curriculum reference Year 5**	**National Curriculum reference Year 6**
M1 Compare, describe and order measures	**Reception Outcomes** Make comparisons between 2 objects relating to their size, length, weight and capacity. **Reception Outcomes** Compare length, weight and capacity.	**1M1** Compare, describe and solve practical problems for: - lengths and heights [e.g.: long/short, longer/ shorter, tall/short, double/half] - mass/weight [e.g.: heavy/light, heavier than, lighter than] - capacity and volume [e.g.: full/empty, more than, less than, half, half full, quarter] - time [e.g.: quicker, slower, earlier, later]	**2M1** Compare and order lengths, mass, volume/ capacity and record the results using >, < and =	**3M1a** Compare lengths(m/cm/mm)	**4M1** Compare different measures, including money in pounds and pence		
				3M1b Compare mass (kg/g)			
				3M1c Compare volume / capacity (l/ml)			
M2 Estimate, measure and read scales		**1M2** Measure and begin to record the following: - lengths and heights - mass/weight - capacity and volume - time (hours, minutes, seconds)	**2M2** Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels	**3M2a** Measure lengths (m/cm/mm)	**4M2** Estimate different measures, including money in pounds and pence		
				3M2b Measure mass (kg/g)			
				3M2c Measure volume / capacity (l/ml)			
M3 Money	**Reception Outcome** To use everyday language related to money.	**1M3** Recognise and know the value of different denominations of coins and notes	**2M3a** Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value				
			2M3b Find different combinations of coins that equal the same amounts of money				
M4	**Reception Outcome** To use everyday language related to time.	**1M4a** Tell the time to the hour and half past the hour and draw	**2M4a** Tell and write the time to five minutes, including quarter	**3M4a**	**4M4a**		

Telling time, ordering time, duration and units of time		the hands on a clock face to show these times	past/to the hour and draw the hands on a clock face to show these times	Tell and write the time from an analogue clock; 12-hour clocks	Read, write and convert time between analogue and digital 12-hour clocks		
		1M4b Sequence events in chronological order using language [e.g.: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	**2M4b** Compare and sequence intervals of time	**3M4b** Tell and write the time from an analogue clock; 24-hour clocks	**4M4b** Read, write and convert time between analogue and digital 24-hour clocks		
		1M4c Recognise and use language relating to dates, including days of the week, weeks, months and years	**2M4c** Know the number of minutes in an hour and the number of hours in a day	**3M4c** Tell and write the time from an analogue clock, including using Roman numerals from I to XII	**4M4c** Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	**5M4** Solve problems involving converting between units of time	
				3M4d Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock/a.m./p.m., morning, afternoon, noon and midnight			
				3M4e Know the number of seconds in a minute and the number of days in each month, year and leap year			
				3M4f Compare durations of events, [e.g.: to calculate the time taken by particular events or tasks]			
M5 Convert between metric units					**4M5** Convert between different units of measurement [e.g.: kilometre to metre; hour to minute]	**5M5** Convert between different units of metric measure [e.g.: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]	**6M5** Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation of up to three decimal places
M6 Convert metric/imperial						**5M6** Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	**6M6** Convert between miles and kilometres
M7 Perimeter, area				**3M7** Measure the perimeter of simple 2–D shapes	**4M7a** Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	**5M7a** Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	**6M7a** Recognise that shapes with the same areas can have different perimeters and vice versa

					4M7b Find the area of rectilinear shapes by counting squares	**5M7b** Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	**6M7b** Calculate the area of parallelograms and triangles
							6M7c Recognise when it is possible to use the formulae for the area of shapes
M8 Volume						**5M8** Estimate volume [e.g.: using 1cm3 blocks to build cuboids (including cubes)] and capacity [e.g.: using water]	**6M8a** Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units [e.g.: mm^3 and km^3]
							6M8b Recognise when it is possible to use the formulae for the volume of shapes
M9 Solve problems (a: money; b: length; c: mass / weight; d: capacity / volume)			**2M9** Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	**3M9a** Add and subtract amounts of money to give change, using both £ and p in practical contexts	**4M9** Calculate different measures, including money in pounds and pence	**5M9a** Use all four operations to solve problems involving measure [money] using decimal notation, including scaling	**6M9** Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
				3M9b Add and subtract lengths (m/cm/mm)		**5M9b** Use all four operations to solve problems involving measure [e.g.: length] using decimal notation, including scaling	
				3M9c Add and subtract mass (kg/g)		**5M9c** Use all four operations to solve problems involving measure [e.g.: mass] using decimal notation, including scaling	
				3M9d Add and subtract volume / capacity (l/ml)		**5M9d** Use all four operations to solve problems involving measure [e.g.: volume] using decimal notation, including scaling	
Geometry: properties of shape							

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
G1 Recognise and name common shapes	Beginning to talk about the shapes of everyday objects, e.g. 'round' and 'tall'. Shows interest in shape by sustained construction activity or by talking about shapes or arrangements. Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat'.	**1G1a** Recognise and name common 2-D shapes [e.g.: rectangles (including squares), circles and triangles]	**2G1a** Compare and sort common 2-D shapes and everyday objects				
		1G1b Recognise and name common 3-D shapes [e.g.: cuboids (including cubes), pyramids and spheres]	**2G1b** Compare and sort common 3-D shapes and everyday objects				
G2 Describe properties and classify shapes			**2G2a** Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line	**3G2** Identify horizontal, vertical lines and pairs of perpendicular and parallel lines	**4G2a** Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes	**5G2a** Use the properties of rectangles to deduce related facts and find missing lengths and angles	**6G2a** Compare and classify geometric shapes based on their properties and sizes
			2G2b Identify and describe the properties of 3-D shapes including the number of edges, vertices and faces		**4G2b** Identify lines of symmetry in 2–D shapes presented in different orientations	**5G2b** Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	**6G2b** Describe simple 3–D shapes
					4G2c Complete a simple symmetric figure with respect to a specific line of symmetry		
G3 Draw and make shapes and relate 2-D to 3-D shapes (including nets)			**2G3** Identify 2-D shapes on the surface of 3-D shapes, [e.g.: a circle on a cylinder and a triangle on a pyramid]	**3G3a** Draw 2–D shapes			**6G3a** Draw 2–D shapes using given dimensions and angles
				3G3b Make 3–D shapes using modelling materials; recognise 3–D shapes in different orientations and describe them		**5G3b** Identify 3–D shapes including cubes and other cuboids, from 2–D representations	**6G3b** Recognise and build simple 3D shapes, including making nets
G4 Angles – measuring and properties				**3G4a** Recognise that angles are a property of shape or a description of a turn	**4G4** Identify acute and obtuse angles and compare and order angles up to two right angles by size	**5G4a** Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	**6G4a** Find unknown angles in any triangles, quadrilaterals and regular polygons
				3G4b Identify right angles, recognise that two right		**5G4b** Identify:	**6G4b** Recognise angles where they meet at a point, are on a

				angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle		- angles at a point and one whole turn (total 360°) - angles at a point on a straight line and ½ a turn (total 180°) - other multiples of 90°	straight line, or are vertically opposite, and find missing angles
						5G4c Draw given angles and measure them in degrees (°)	
G5 Circles							**6G5** Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Geometry: position and direction

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
P1 Patterns	Talk about patterns in the environment. For example, stripes on clothes. Use informal language like 'pointy', 'spotty'. Continue, copy and create repeating patterns.		**2P1** Order and arrange combinations of mathematical objects in patterns and sequences				
P2 Describe position, direction and movement	Understand positional language with focus on under, over, behind, infront, forwards, backwards.	**1P2** Describe position, directions and movement, including half, quarter and three-quarter turns	**2P2** Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clock-wise and anti-clockwise)		**4P2** Describe movements between positions as translations of a given unit to the left/right and up/down	**5P2** Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	**6P2** Draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes
P3 Coordinates					**4P3a** Describe positions on a 2–D grid as co-ordinates in the first quadrant		**6P3** Describe positions on the full co-ordinate grid (all four quadrants)
					4P3b Plot specified points and draw sides to complete a given polygon		

Statistics

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
S1 Interpret and represent data			**2S1** Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	**3S1** Interpret and present data using bar charts, pictograms and tables	**4S1** Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	**5S1** Complete, read and interpret information in tables, including timetables	**6S1** Interpret and construct pie charts and line graphs and use these to solve problems
S2 Solve problems involving data			**2S2a** Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	**3S2** Solve one-step and two step questions [e.g.: 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts, pictograms and tables	**4S2** Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	**5S2** Solve comparison, sum and difference problems using information presented in a line graph	
			2S2b Ask and answer questions about totalling and comparing categorical data				
S3 Mean average							**6S3** Calculate and interpret the mean as an average

National Curriculum

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/381344/Master_final_national_curriculum_28_Nov.pdf

Year 3 programme of study

Number – number and place value

Statutory requirements

Pupils should be taught to:

- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number; *(from Year 4)*
- recognise the place value of each digit in a three-digit number (hundreds, tens, ones);
- compare and order numbers up to 1000;
- identify, represent and estimate numbers using different representations;
- read and write numbers up to 1000 in numerals and in words;
- solve number problems and practical problems involving these ideas.

Notes and guidance (non-statutory)

Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.

They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16).

Using a variety of representations, including those related to measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.

Number – addition and subtraction

Statutory requirements

Pupils should be taught to:

- add and subtract numbers mentally, including:
  - a three-digit number and ones;
  - a three-digit number and tens;
  - a three-digit number and hundreds;
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction; *(from Year 4)*
- estimate the answer to a calculation and use inverse operations to check answers;
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Notes and guidance (non-statutory)

Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.

Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see Mathematics Appendix 1).

Number – multiplication and division

Statutory requirements

Pupils should be taught to:

- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables; *(from Year 4)*
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods; *(from Year 4)*
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Notes and guidance (non-statutory)

Pupils continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables.

Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication and division facts (for example, using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (for example, 30 × 2 = 60, 60 ÷ 3 = 20 and 20 = 60 ÷ 3).

Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division.

Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).

Number – fractions

Statutory requirements

Pupils should be taught to:

- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10;
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators;
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators;
- recognise and show, using diagrams, equivalent fractions with small denominators;
- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$];
- compare and order unit fractions, and fractions with the same denominators;
- solve problems that involve all of the above.

Notes and guidance (non-statutory)

Pupils connect tenths to place value, decimal measures and to division by 10.

They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure.

Pupils understand the relation between unit fractions as operators (fractions of), and division by integers.
They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity.

Pupils practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.

Measurement

Statutory requirements

Pupils should be taught to:

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml); *(from Year 4)*
- measure the perimeter of simple 2-D shapes; *(from Year 4)*
- add and subtract amounts of money to give change, using both £ and p in practical contexts;
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks; *(from Year 4 and Year 5)*
- estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight; *(from Year 4)*
- know the number of seconds in a minute and the number of days in each month, year and leap year;
- compare durations of events [for example to calculate the time taken by particular events or tasks].

Notes and guidance (non-statutory)

Pupils continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm).

The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high) and this connects to multiplication.

Pupils continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. The decimal recording of money is introduced formally in year 4.

Pupils use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.

Geometry – properties of shapes

Statutory requirements

Pupils should be taught to:

- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them;
- recognise angles as a property of shape or a description of a turn;
- identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle;
- identify horizontal and vertical lines and pairs of perpendicular and parallel lines. *(from Year 4 and Year 5)*

Notes and guidance (non-statutory)

Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.

Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.

Statistics

Statutory requirements

Pupils should be taught to:

- interpret and present data using bar charts, pictograms and tables;
- solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

Notes and guidance (non-statutory)

Pupils understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy.

They continue to interpret data presented in many contexts.